

This plant is very near *G. panicoides* Miq., differing in the absence of spurs to the anther, and the form of the calyx. It is possible that it is only an abnormal form. The Singapore plant produced leafless or almost leafless stems bearing panicles.

§ CERATANTHERA.

Anther 2-spurred. Flower yellow.

Gl. panicoides. Miquel. l.c. 614.

Gl. Kingii. Baker. l.c. 204. *G. stenothyrea* Bak. l.c.

Stems tufted, from nine inches to two feet in height usually rather slender, sheaths at the base spotted with red, more or less pubescent. Leaves narrow lanceolate acuminate to ovate acuminate $1\frac{3}{4}$ inch to 5 inches long and $\frac{3}{4}$ to one and a half inch broad, ligule hispid. Panicle slender, the branches usually short sometimes rather long spreading. Flowers usually few. Bracts lanceolate green. Calyx short unequally 3 toothed, one tooth much longer than the others, lanceolate blunt, orange $\frac{1}{8}$ inch long. Corolla tube $\frac{1}{2}$ inch long, lobes cymbiform $\frac{1}{4}$ inch long orange. Staminodes rather longer oblong, orange. Lip short oblong bilobed orange with a dark brown central spot. Stamen filament one inch long, anther cells parallel, connective developed all round and at the base prolonged into a pair of subulate spurs. Style longer than the stamen, stigma very small. Capsule globose smooth rounded green $\frac{1}{4}$ inch long terminated by the enlarged calyx.

Singapore, Bukit Timah and other woods; Muar (Feilding). Malacca, Sungai Hudang; Merlimau. Selangor, Kwala Lumpur, Batang Berjuntai, Petaling. Sungai Ujong; Bukit Tumiang. Perak. Bruas. Dindings. Province Wellesley, Tasek Gelugur. Lankawi, (Curtis 2642) also Lingga island (Hullett). Sumatra on the Kelantan river, Siak. Borneo, Sandakan, Bongaya river, Labuk bay and Sarawak.

This is a very common plant along stream banks and in damp spots in woods all over the Malay Peninsula. It is very variable in size, form of leaf, and length of panicle and its branches. The forms from Sarawak and Sandakan are stout broad leaved forms with branches an inch and a half long, and

longer calyces, but I can only consider them as extreme forms.

I have the authority of Dr. King for identifying *G. Kingii* Baker with the ill-described *G. panicoides* of Miquel of which he has seen a type. It would indeed be strange if so very abundant and conspicuous a plant had escaped Miquel. I cannot from the description distinguish *G. stenothyrsa* Baker. from this plant. It is based on specimens from Tenasserim collected by Parish, and from a plant collected by Cuming in Malacca.

Like all other Globbas, this often produces bulbils in the axils of the bracts, and often the whole panicle produces bulbils instead of flowers.

It is known to the Malays by a variety of names, viz. Haliya hutan (wild ginger), Meroyan Tingal, and Meroyan Br'choin, Pua Birah, Bunga Lidah Munta, Haliya K'ra. The slightly aromatic roots are used in native medicine for fever, and rheumatism.

G. pendula Roxb. Asiat. Res. XI. 359 Fl. Ind. 179.

A large plant 3 feet or more tall. Leaves oblong cuspidate 9 inches long, 4 across glabrous, ligule rounded pubescent, sheaths with pubescent edges. Panicle stout sometimes nearly 2 feet long, branches short few-flowered. Bracts lanceolate caducous. Calyx funnel-shaped $\frac{1}{4}$ inch long, with 3 unequal acute lobes. Corolla tube slender half a inch long, lobes cymbiform $\frac{1}{4}$ inch long orange yellow.

Staminodes thin oblanceolate obtuse as long. Lip adnate from a little above the staminodes narrow bilobed orange with a maroon central spot nearly $\frac{1}{2}$ an inch long. Stamen filament over $\frac{1}{2}$ an inch long, anther elliptic horns linear subulate $\frac{1}{2}$ about as long as the anther, connective prolonged above the anther into a rounded process.

Penang. Banks close to the Waterfall. Perak on Maxwell's hill. Kedah Peak by the Cascade. Pahang; Tahan river. One of the biggest species. The name *pendula* is by no means a good one, as the stout panicle is usually stiffly erect.

G. montana n.sp.

Stems about 2 feet tall. Leaves lanceolate cuspidate thin 7 inches long $1\frac{1}{2}$ inch broad, with a long attenuate point, glabrous above paler pubescent beneath, petiole short but usually distinct,

ligule rounded pubescent, sheaths very hairy. Panicle long slender 1 to $1\frac{1}{2}$ foot long, branches 1 to 2 inches long, horizontal rather distant few flowered. Bracts ovate oblong $\frac{1}{8}$ inch long. Calyx campanulate lobes acute, $\frac{1}{8}$ inch long. Corolla tube slender $\frac{1}{2}$ inch long, lobes broadly ovate obtuse $\frac{1}{4}$ inch long, yellow. Staminodes absent. Lip small free for some distance above the corolla lobes apex rounded almost entire. Stamen, filament above the lip $\frac{1}{2}$ an inch long, anther small elliptic with large flat triangular wings running the whole length but shorter than the anther.

Kedah Peak, and near the waterfall.

This is a stout plant like *G. pendula* Roxb, but is remarkable in the anther spurs, which form a triangle in the centre of which are the anther cells. The staminodes seem to be entirely wanting.

Gl. calophylla n.sp.

Stems over a foot tall fairly stout, lower sheaths spotted red. Leaves oblong lanceolate acuminate with a long point 6 inches long $1\frac{3}{4}$ inch broad, deep green above with silvery central and lateral bars, glaucous tinted with red beneath, base narrowed into a petiole, glabrous above pubescent especially along the midrib beneath. Panicle 6 inches long branches spreading distant an inch long, many flowered. Bracts broadly oblong ovate $\frac{1}{6}$ inch long persistent for some time. Calyx tubular campanulate dilated upward $\frac{1}{8}$ inch long with short lobes. Corolla tube very slender $\frac{1}{4}$ inch long, lobes boat-shaped broad blunt yellow. Staminodes oblong half as long again as the lobes. Lip short linear apex bifid lobes rounded, orange with no spot. Filament very slender $\frac{3}{4}$ inch long, anther spurs 2 broad triangular, as broad as the anther at the base. Bulbils sometimes produced.

Siam near Pungah (Curtis No. 3286.)

This pretty plant is noticeable from its ornamenteally colored leaves and botanically it is remarkable for its dilated calyx and its unusually large staminodes and very short narrow lip.

Gl. malaccensis n.sp.

Stems 2 feet tall or longer. Leaves broadly lanceolate acuminate rather distant six inches long, 2 across, glabrous,

ligule short rounded pubescent, sheath pubescent, petiole distinct sometimes half an inch long. Panicle short compact on a long peduncle nude except for a few distant bracts, the lowest of which are nearly 2 inches long linear green; branches short about $\frac{1}{4}$ inch long few flowered. Calyx cylindric with short acute lobes nearly $\frac{1}{4}$ inch long. Corolla tube very slender $\frac{1}{2}$ an inch long, lobes ovate boat-shaped less than $\frac{1}{4}$ inch long yellow. Staminodes oblong obtuse about as long. Lip short linear oblong entire. Anther oblong with two triangular subulate spurs from the centre of the side, filament $\frac{3}{4}$ inch long. Capsule globose wrinkled $\frac{1}{4}$ inch long.

Malacca. Woods at the base of Mt. Ophir: Bukit Sedanen. Selangor, Bukit Hitam (Kelsall). Sungai Ujong, Bukit Sulu; Bukit Kandong.

This is called by the Malays, Pua Rimbah, Pua Hudang and Pua Gajah, and is used medicinally in childbirth.

It has the habit of *G. aurantiaca* Miq, but is very much less hairy and has only two spurs on the anther, and the long peduncle with a terminal dense panicle and narrow persistent bracts distinguish it from all others.

Gl. integra n.sp.

Stem 3 to 4 feet tall. Leaves oblong lanceolate cuspidate subpetiolate about a foot long and three inches across, the point nearly 2 inches long, glabrous above minutely pubescent beneath, ligule rounded and pubescent. Panicle about a foot long rather weak, branches $\frac{1}{2}$ an inch long or less, patent numerous with two or three flowers at the end. Bracts oblong ovate $\frac{1}{8}$ inch long. Calyx small campanulate $\frac{1}{8}$ inch long, lobes ovate obtuse. Corolla tube about twice as long, lobes boat-shaped obtuse $\frac{1}{4}$ inch long orange. Staminodes much smaller oblong. Lip narrow linear obtuse entire. Filament short, anther oblong with a broad triangular wing on each side.

Siam, Bangtaphan, common along Ba Quean stream. (Dr. Keith.)

This species is remarkable for its short flowers, narrow entire lip and broad triangular anther-spurs.

Gl. Keithii n. sp.

Leaves narrowly lanceolate cuspidate six inches long about

$\frac{1}{2}$ an inch broad, glabrous, ligule absent. Panicle over six inches long with numerous branches 2 inches long or less with a few flowers at the apex. Bracts linear lanceolate persistent $\frac{1}{2}$ an inch long. Calyx slender tubular $\frac{1}{4}$ inch long lobes lanceolate. Corolla tube very long and slender $\frac{3}{4}$ inch long grey, lobes obtuse boat-shaped less than $\frac{1}{4}$ inch long yellow. Staminodes lanceolate oblong yellow. Lip long and narrow deeply bilobed lobes rounded. Filament very slender $\frac{1}{2}$ an inch long, anther elliptic grey with a lanceolate acuminate spur on each side in the upper part of the anther.

Siam. Bangtaphan in Bamboo-jungle. (Dr. Keith.)

The very narrow leaves, and long corolla tube, and the curious anther spurs easily distinguish this plant.

Flowers white or violet.

G. leucantha Miq. l. c. 612.

G. pallidiflora Bak. l. c. 204.

Rhizome short, roots with tuberous fusiform swellings. Stems about two feet tall, often less. Leaves broadly lanceolate acute, 8 inches long and 3 across, very finely pubescent especially on the under surface, dark green above, purple beneath, sheaths striate hispid usually spotted with purple, ligule short hardly $\frac{1}{8}$ inch long, rounded hispid. Panicle terminal rarely radical, lax, with spreading branches two inches long. Bracts ovate $\frac{1}{8}$ inch long. Flowers in threes on the branches, ivory white. Bracts ovate pure white. Calyx tubular with three teeth, two longer than the third, $\frac{1}{4}$ inch long white shining, minutely pubescent. Corolla tube slender about $\frac{1}{2}$ an inch long, lobes cymbiform $\frac{1}{4}$ inch long. Staminodes narrower oblong a little longer. Lip short oblong rounded shortly bilobed, white with a purplish brown spot, (sometimes absent). Stamen nearly one inch long (above the corolla) anther cordate with two slender subulate horns a little longer than it, cells yellowish. Style slender longer than the anther, ovary white pubescent. Styloides cylindrical acute. Capsule globose $\frac{3}{16}$ inch long polished smooth bright green. Seeds about 8, angled $\frac{1}{8}$ inch long.

Singapore, common on Bukit Timah, Chan Chu Kang, etc. Pulau Damar, Johore, Tanah Runto; Gunong Pulai; Gunong Panti (King). Perak, Dindings at Lumut.

A very pretty species, the whole of the inflorescence being pure white and much of it polished like ivory. It frequents rather dry parts of woods often growing on rocks. Forms occur in which the leaves on some of the flowering stems are suppressed, the stems being merely covered with sheaths. In one plant the stem bore axillary panicles as well as the terminal one. Bulbils are often to be met with on the lower branches of the panicle but more rarely than in other species.

Gl. albiflora n. sp.

Stems three feet tall. Leaves narrowly lanceolate acuminate cuspidate eight inches long, one inch broad, glabrous green with a silvery grey variegation along the midrib when young, ligule very short, sheath glabrous. Panicle 12-15 inches long with distant slender branches spreading, one inch long or less. Bracts persistent linear obtuse nearly $\frac{1}{4}$ inch long. Flowers white, one or two only on the ends of the branches. Calyx tubular with short lanceolate lobes. Corolla tube very slender $\frac{1}{2}$ an inch long, lobes boat-shaped ovate. Staminodes longer oblong linear. Lip short obtuse bilobed, lobes rather long divergent. Filament $\frac{3}{4}$ inch long anther oblong, spurs 2 linear acuminate falcate, longer than the anther.

Penang: Government Hill near the cooly lines (Curtis 2851). A rather slender, narrow leaved plant, remarkable for its long persistent bracts, and long upcurved spurs of the anther.

Gl. elegans n. sp.

Stems over a foot tall rather slender. Leaves lanceolate acuminate minutely pubescent beneath, 5 inches long, $1\frac{1}{4}$ inch wide, ligule and margin of sheath hispid. Panicle erect rather slender with short stiff spreading branches half an inch long. Bracts lanceolate green persistent $\frac{1}{8}$ inch long. Flowers few crowded at the ends of the branches, white. Calyx unequally 3 lobed, lobes acute, $\frac{1}{4}$ inch long, Corolla tube nearly $\frac{1}{3}$ an inch long, lobes, oblong ovate obtuse $\frac{3}{16}$ inch long. Staminodes very similar and as long, Lip short oblong ovate obtuse entire white with a violet central spot. Filament $\frac{1}{2}$ an inch long, spurs of anther linear curved up at the ends $\frac{3}{16}$ inch long, Capsule globose smooth $\frac{1}{4}$ inch long

Dindings, Woods near Bruas, and Gunong Tungul. (No 8392). This resembles *G. leucantha* Miq, but has smaller nearly glabrous leaves, straight and slender panicle and an entire lip.
Gl. violacea n. sp.

Stems one to two feet tall rather stout. Leaves large or moderate oblong lanceolate acuminate with a long point, covered with scattered strigose hairs on both surfaces, or sometimes only scabrid, 7 to 10 inches long, 2 inches broad, dark green above paler beneath, ligule short rounded very hairy, sheaths with stiff hairs. Panicle of numerous short branches about half an inch long stiff and horizontal. Bracts small ovate lanceolate white. Calyx cylindric with three short points, one shorter than the others, as long as the corolla tube, ivory white. Corolla tube $\frac{1}{4}$ inch long, lobes ovate boat-shaped violet or white. Staminodes longer and narrower violet, $\frac{1}{4}$ inch long. Lip very narrow linear grooved nearly the whole way down bilobed, violet or white with a darker spot near the apex, apex yellowish. Stamen long rather stout, anther oblong rather large violet, with two long linear spurs. Capsule smooth globose white dehiscing entirely and exposing a number of ovoid beaked brown seeds.

Johore: Gunong Pulai. Selangor, Bukit Hitam (Kelsall). Perak, Bujong Malacca; Gunong Keledang. Ipoh (Curtis 3316) Gunong Inas (Wray 4164). Dindings.

This is very nearly allied to *G. leucantha*, but the corolla tube is much shorter, and the lip very much narrower. The flowers are sometimes entirely ivory white, at others violet.

§ MARANTELLA.

Anther 4 spurred. Flowers yellow.

Gl. aurantiaca Miq. l. c. 613.

Rhizome short. Stems about 18 inches tall, the bases covered with hairy sheaths. Leaves oblong to ovate cuspidate 7 inches long and 3 wide (often much smaller) hairy beneath, sheaths hairy. Peduncle 18 inches or less, hairy. Panicle compact usually short sometimes as much as 8 inches long, branches short $\frac{1}{4}$ inch long, numerous horizontal, with a few empty bracts at the base and two or more flowers. Bracts orange, oblong obtuse hispid $\frac{1}{8}$ inch long, lower ones sometimes

bulbilliferous. Pedicels $\frac{1}{4}$ inch long, pubescent. Calyx funnel-shaped $\frac{1}{4}$ inch long 3 toothed, teeth short and blunt pubescent. Corolla yellow, tube nearly $\frac{1}{2}$ an inch long lobes rather large oblong. Lip short broad oblong bilobed orange with a brown central blotch. Staminodes short oblong. Stamen filament slender $\frac{1}{4}$ inch long, anther oblong with two pairs of triangular teeth. Fruit globose smooth crowned with the long tubular calyx.

Malacca, Brisu (Derry, No 18). Selangor, common, Bukit Hitam; Bukit Kudah. Negri Sembilan, Gunong Berumbun. Perak, Larut Hills. Penang, Moniot's road. This plant, the "Pua Gumbur" of the Malays, is easily recognised by its hairy stem, broad hairy leaves and crowded panicle.

Gl. perakensis n. sp.

Stem stout about a foot or a foot and a half tall. Leaves obovate cuspidate broad, narrowed at the base glabrous, 8 inches long by 4 wide, petiole $\frac{1}{4}$ inch hispid, ligule short oblong rounded. Peduncle 8 inches long with large ovate orange bracts, the lowest an inch long, upper ones smaller oblong obtuse, softly pubescent, edges ciliate. Panicle short an inch long dense, branches about half an inch long pubescent. Bracts short and broad ovate orange. Calyx short tubular $\frac{1}{8}$ inch long pubescent, orange. Corolla tube twice as long, lobes ovate. Lip short broad oblong bilobed orange with a brown central spot. Staminodes oblong linear obtuse pale orange. Stamen connective of 4 triangular broad spurs. Capsule globose, pustulate, especially when young, orange color.

Perak, Ipoh, Kinta, (Curtis 3141) Rocks on Bujong Malacca.

Allied to *G. aurantiaca* Miq. but less hairy, the peduncle being only softly pubescent; the sheathing leaves on the peduncle are very much larger and broader and the lip shorter and broader almost square in outline.

Gl. variabilis. Ridl. Trans. Linn. Soc. Vol. 3. p. 378.

Stems over a foot tall. Leaves ovate or ovate lanceolate acuminate 4 inches long, $1\frac{1}{2}$ inch broad, glabrous dark green above and purplish beneath. Panicles about 4 or 5 inches long rather compact with short branches. Bracts $\frac{3}{8}$ inch long oblong